CLAIMS

What is claimed is:

1. A method of manufacturing a lead acid electrochemical cell, comprising: preparing a sulfated electrochemically active material to which has been added an oxide of lead, sulfuric acid and a tin-containing compound, said preparation step including introducing the tin-containing compound to the material subsequent to adding the sulfuric acid to the material; coating said electrochemically active material onto a first electrode of a first polarity; arranging said first electrode adjacent to a second electrode of a polarity opposite the first electrodes, the first electrode and second electrode being separated by a separator; and containing said first electrode, second electrode and separator in a container.

2. The method of claim 1, wherein said tin-containing compound is selected from the group consisting of $SnSO_4$, SnO, metallic tin, a tin(II) salt and a tin(IV) salt.

3. The method of claim 2, wherein said tin-containing compound includes $SnSO_4$.

4. The method of claim 1, wherein said electrochemically active material is approximately .001 to 5% $SnSO_4$ by weight.

5. The method of claim 4, wherein said electrochemically active material is approximately 0.1 to 1% $SnSO_4$ by weight.

6. The method of claim 5, wherein said electrochemically active material is approximately 0.3% $SnSO_4$ by weight.

7. The method of claim 1, wherein said first electrode includes a material selected from the group

consisting of substantially pure lead and a lead/tin alloy.

8. The method of claim 8, wherein said first electrode is approximately 1 to 3% tin by weight.

9. The method of claim 8, wherein said first electrode is approximately .5 to 1.5% tin by weight.

10. A method of manufacturing a sulfated electrochemically active material for use in a lead acid electrochemical cell, comprising introducing sulfuric acid to an oxide of lead, and subsequently introducing a tin-containing compound.

11. The method of claim 10, wherein said tin-containing compound is selected from the group consisting of $SnSO_4$, SnO, metallic tin, a tin(II) salt and a tin(IV) salt.

12. A sulfated electrochemically active material for a lead acid electrochemical cell produced by introducing sulfuric acid to an oxide of lead and subsequently introducing a tin-containing compound.

13. The material of claim 12, wherein said tin-containing compound is selected from the group consisting of $SnSO_4$, SnO, metallic tin, a tin(II) salt and a tin(IV) salt.

14. An electrochemical cell, comprising: a first electrode of a first polarity, said first electrode being coated with a sulfated electrochemically active material to which has been added an oxide of lead, sulfuric acid and a tin-containing compound, said electrochemically active material being prepared by introducing the tin-containing compound to the material subsequent to introducing the sulfuric acid to the material; a second electrode of a polarity opposite the first electrode; and a separator between the first electrode and second electrode.

15. The cell of claim 14, wherein said tin-containing compound is selected from the group consisting of $SnSO_4$, SnO, metallic tin, a tin(II) salt and a tin(IV) salt.

16. The cell of claim 15, wherein said electrochemically active material is approximately .001 to 5% to $SnSO_4$ by weight.

17. The cell of claim 16, wherein said electrochemically active material is approximately 0.1 to 1% $SnSO_4$ by weight.

18. The cell of claim 17, wherein said electrochemically active material is approximately 0.3% $SnSO_4$ by weight.

19. The cell of claim 14, wherein said first electrode includes a material selected from the group consisting of substantially pure lead and a lead/tin alloy.

20. The cell of claim 19, wherein said first electrode is approximately zero to 3% tin by weight.

21. The cell of claim 20, wherein said first electrode is approximately .5 to 1.5% tin by weight.

22. A method of manufacturing a lead acid electrochemical cell, comprising: preparing an unsulfated electrochemically active material to which has been added an oxide of lead and including a compound selected from the group consisting of tin, antimony, arsenic, germanium, indium, selenium, gallium, tellurium and other semiconductors; coating said electrochemically active material onto a first electrode of a first polarity; arranging said first electrode adjacent to a second electrode of a polarity opposite the first electrodes, the first electrode and second electrode being separated by a separator; and containing said first electrode, second electrode and separator in a container.

23. The method of claim 22, wherein said compound is selected from the group consisting of $SnSO_4$, SnO, metallic tin, a tin(II) salt and a tin(IV) salt.

24. The method of claim 23, wherein said compound includes $SnSO_4$.

25. The method of claim 22, wherein said electrochemically active material is approximately .001 to 5% $SnSO_4$ by weight.

26. The method of claim 25, wherein said electrochemically active material is approximately 0.1 to 1% $SnSO_4$ by weight.

27. The method of claim 26, wherein said electrochemically active material is approximately 0.3% $SnSO_4$ by weight.

28. The method of claim 22, wherein said first electrode includes a material selected from the group consisting of substantially pure lead and a lead/tin alloy.

29. The method of claim 28, wherein said first electrode is less than 3% tin by weight.

30. The method of claim 28, wherein said first electrode is approximately .5 to 1.5% tin by weight.

31. A method of manufacturing an unsulfated electrochemically active material for use in a lead acid electrochemical cell, comprising introducing an oxide of lead to water; and introducing a compound selected from the group consisting of tin, antimony, arsenic, germanium, indium, selenium, gallium, tellurium and other semiconductors.

32. The method of claim 31, wherein said compound is selected from the group consisting of $SnSO_4$, SnO, metallic tin, a tin(II) salt and a tin(IV) salt.

33. An unsulfated electrochemically active material for a lead acid electrochemical cell produced by

introducing an oxide of lead to water; and introducing a compound selected from the group consisting of tin, antimony, arsenic, germanium, indium, selenium, gallium, tellurium and other semiconductors.

34. The material of claim 33, wherein said compound is selected from the group consisting of $SnSO_4$, SnO, metallic tin, a tin(II) salt and a tin(IV) salt.

35. An electrochemical cell, comprising: a first electrode of a first polarity; and a coating coated onto said first electrode, the coating including an unsulfated electrochemically active material to which has been added an oxide of lead and a compound selected from the group consisting of tin, antimony, arsenic, germanium, indium, selenium, gallium, tellurium and other semiconductors.

36. The cell of claim 35, wherein said compound is selected from the group consisting of $SnSO_4$, SnO, metallic tin, a tin(II) salt and a tin(IV) salt.

37. The cell of claim 36, wherein said electrochemically active material is approximately .001 to 5% to $SnSO_4$ by weight.

38. The cell of claim 37, wherein said electrochemically active material is approximately 0.1 to 1% $SnSO_4$ by weight.

39. The cell of claim 38, wherein said electrochemically active material is approximately 0.3% $SnSO_4$ by weight.

40. The cell of claim 35, wherein said first electrode includes a material selected from the group consisting of substantially pure lead and a lead/tin alloy.

41. The cell of claim 40, wherein said first electrode is approximately zero to 3% tin by weight.

42. The cell of claim 41, wherein said first electrode is approximately .5 to 1.5% tin by weight.

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